

Street intercept method: An innovative approach to recruiting young adult high-risk drinkers

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Abstract

Introduction and Aims. Many young adults are risky drinkers who are often missed by general population surveys. The aim of the present study was to assess factors affecting participation rates in a street intercept approach to recruiting young adult bar-goers for an online survey. **Design and Methods.** Two hundred eighty-seven young adults were approached as they entered the bar district of a medium-sized city on two consecutive weekend nights. Of these, 170 met eligibility requirements and were invited to complete a 2 min street survey for which they were paid \$5 and given a gift card for \$50 or \$100 to be redeemed when they completed a follow-up online survey. **Results.** Sixty-one per cent of eligible persons ($n = 104$) participated in the street survey, with greater participation on the second night (74% vs. 50%). Sixty-eight per cent ($n = 71$) of those who participated in the street survey completed the online survey, with no differences in response by age or student status; however, men were significantly more likely to complete the online survey if they received the higher incentive, had consumed less alcohol and were recruited before midnight. The larger incentive was especially effective at increasing completion rates for men who had consumed a larger amount of alcohol. **Discussion and Conclusions.** Street intercept is an effective and efficient recruitment method that can measure both drinking and other experiences in the event and link these data to information collected in follow-up research. Unlike recruitment through convenience samples, response rates and response bias can also be assessed. [Graham K, Bernards S, Clapp JD, Dumas TM, Kelley-Baker T, Miller PG, Wells S. Street intercept method: An innovative approach to recruiting young adult high-risk drinkers. *Drug Alcohol Rev* 2014;33:449–455]

Key words: sampling, licensed premise, young adult, alcohol consumption, research method.

Introduction

Heavy drinking young adults are an important population to study because of their high risk for alcohol-related harms. However, young adults tend to be non-responders to general population surveys [1] with heavier drinkers being especially difficult to recruit [2].

Therefore, as response rates to household surveys decline [3] potentially exacerbating underrepresentation of young heavy drinkers, it is important to develop better methods for sampling young adult high-risk drinkers.

In recent years, innovative methods have been developed to recruit heavy drinking young adults as they

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enter, exit or drink inside licensed venues ('portal' studies) or on their way to and from bar districts ('intercept' studies). These approaches are becoming increasingly common partly because they can be used to collect 'in-time' data about drinking behaviour, the bar-going experience and sometimes breath alcohol concentration data. Plus, an important advantage of these approaches is that they can be used to recruit all bar-going young adults, including non-students who are often excluded or underrepresented in research on young adults.

Both portal [4–10] and intercept [11–14] studies have obtained fairly high participation rates using random sampling and are able to measure non-response bias. The portal approach, however, has limitations, such as restricting samples to patrons of specific venues and usually requiring the licensee's permission for recruitment. Intercept studies, on the other hand, may have lower response rates because potential participants do not want to be delayed in reaching their destination [6]. Additionally, intercept methods have been used mainly at border crossings [13,14] where the natural funnelling through customs facilitates recruitment, or on college campuses [11,12] where research is normative. Nevertheless, the street intercept method is more flexible than the portal approach and avoids potential bias related to obtaining permission from licensees to recruit outside their premises. Although some studies were able to conduct portal recruitment without permission of licensees [6,9], portal recruitment can be difficult at premises where security staff stand outside and discourage recruitment in the immediate area of the bar. Therefore, in the present research, we focused on street intercept recruitment.

Portal and intercept methods have numerous strengths, but they necessitate limited data collection because young people are unlikely to participate if detained for long. Therefore, when there is a need for more extensive data, these approaches need to be combined with a follow-up survey or interview where more detailed information can be collected. Kelley-Baker *et al.* [13] demonstrated the feasibility of this approach by recruiting female participants from a Tijuana border crossing sample to a follow-up telephone interview, although their follow-up rate of 41% was lower than desirable, especially for women who were more intoxicated at the time of the intercept.

Thus, research is needed to test the factors that influence response rates of street intercept approaches to recruiting young adults from nightlife districts for follow-up research. It is important to test the influence of factors such as use of incentives, gender, age, student status, time and day of recruitment, alcohol consumption prior to recruitment and potential biases related to usual drinking pattern.

Objectives

The study objectives included pilot-testing a street intercept approach in a bar district to: (i) estimate the proportion of randomly selected young adults who would participate in a very brief street survey (1–2 min) and, of those, the proportion who would later complete a more extensive online survey; (ii) evaluate the impact of different incentives (\$50 vs. \$100) on completing the online survey; (iii) compare rates of completing the online survey by gender, age, student status, time and day of recruitment, and alcohol consumed prior to recruitment; and (iv) assess the extent that drinks consumed before recruitment reflected a general pattern of alcohol consumption.

Methods

Recruitment occurred during one weekend (Friday and Saturday from 9 PM to 1 AM) in May of 2012 on the edge of the entertainment district in a mid-sized city in Ontario, Canada. The district contained a number of different types of bars from large dance clubs to smaller pubs as well as restaurants and business that were open during the day. It was a primary destination for students from the local university and college as well as non-students. The city is located on the border with the USA; thus, bars were also frequented by young adults from across the border where the legal drinking age is 21 (compared with 19 in Ontario). However, because this study was part of a larger study focused on the local community, the sample was restricted to residents of the city/county (i.e. excluding US visitors).

Mixed-gender teams of researchers (in groups of two to four) wearing jackets and T-shirts labelled 'bar-goer study' in large print approached young adults to complete a brief (2 min) interview on the spot and to provide them with a gift card that could be activated by completing a 30 minute online survey. Participants were told that the online survey concerned their experiences in bars including aggression and that their responses would be confidential. Teams of researchers were stationed in the highest foot traffic areas of the bar district and rotated to higher traffic locations as necessary.

To prevent selection bias, research staff were trained to use the 'fixed line method' of recruitment [10] for each potential participant. This involved approaching the first young-adult to step across a previously determined, pre-existing feature on the sidewalk (e.g. lamp post, sidewalk line). To be eligible, participants were required to be between 19 (legal drinking age) and 29 years of age, live within the city/county (so that the sample represented residents of the local area) and be on their way to a bar or club.

Participants were given \$5 as a token of appreciation for the on-the-spot survey. The incentive for the online survey was an inactive gift card for either \$50 or \$100. The amount was randomised by placing cards in sealed envelopes in advance and then shuffling the envelopes prior to distribution to participants. Thus, neither staff nor participants had knowledge of the gift card value until the participant opened the envelope. The gift card displayed the survey website and a participant number that allowed access to the online survey. The gift card could not be activated until the participant completed the online survey at which point they were given a unique password which allowed them to redeem a gift card of their choice from a gift card website. Participants who were willing to provide researchers with their cell phone numbers (87.5%) were also sent a text message with information needed to access the online survey (deleted immediately after sending to ensure that no identifying information about participants was retained).

When accessing the online survey, participants were led to a screen providing all necessary consent information (including investigators' and Ethics Review Board names and contact information). Upon survey completion, participants were given instructions for redeeming the gift card.

Measures

As part of the intercept survey, participants were asked their age and whether they were a student. They were also shown a picture with examples of a Canadian standard drink (12 oz. of 5% alcohol beer, 5 oz. of 12% wine, 1.5 oz. of spirits, such as vodka, etc.) and asked how many standard drinks they had consumed that night. Questions on the online survey relevant to the current analyses included usual frequency of drinking alcohol (0 = never, 1 = less than once a month, 2 = 1–3 times a month, 3 = once a week, 4 = 2–3 times per week, 5 = 4–6 times a week, 6 = everyday), usual number of drinks on drinking occasions and largest number of drinks on any occasion, all for the past year.

Analyses

In addition to descriptive analyses, we used logistic regression to compare participants and non-participants by gender and incentive level and on other study variables.

Results

Participation in the street survey

In total, 287 people were approached (excluding 10 people who were clearly outside the age range and two

who appeared too aggressive to approach safely). Of those approached, 117 were ineligible (outside the age range, not a resident of the city/county or not going to a bar). Of the remaining 170 eligible individuals (93 men and 75 women, 2 whose gender was not recorded), 104 (61.2%) agreed to participate in the intercept survey, including 53 men and 49 women (participation rates of 56.9% and 65.3%, respectively) and two persons whose gender was unknown.

Approximately half the sample (46.5%) was recruited before midnight, with the remainder recruited between midnight and 1 am. Of those who participated, 56.7% were less than 22 years of age (50.9% of men, 65.3% of women), 55.8% were students (49.1% of men, 65.3% of women) and 79.8% had been drinking prior to recruitment (75.5% of men, 83.7% of women), with 32.7% of participants having already consumed six or more drinks (35.8% of men, 30.6% of women).

Participation was significantly higher on the second night (Saturday, 74.3%) than the first night (Friday, 49.5%) (odds ratio = 2.78; confidence interval = 1.44, 5.36; $P = 0.002$). Women were significantly more likely to participate after midnight (77.8%) than before (52.8%) (odds ratio = 3.13; confidence interval = 1.13, 8.71; $P = 0.029$) while time was unrelated to participation by men (52.2% after vs. 60.0% before) (odds ratio = 0.79; confidence interval = 0.35, 1.80; $P = 0.570$). Refusals appeared to be mainly due to people being in a hurry or with other people who did not want to wait. Some refusals involved people who avoided the researchers, perhaps suspecting they were selling something or promoting specific establishments (common practice in this bar district).

Completion of the online survey

Over two-thirds (68.3%, $n = 71$) of those who participated in the intercept survey completed the online survey. As reported in Table 1, the main effects for both gender and size of incentive were not significant (although they were in the predicted direction); however, the effect of the incentive varied by gender with a large and significant effect for men (80.8% for \$100 vs. 48.1% for \$50) and no effect for women (74.1% for \$100 vs. 77.3% for \$50).

As shown in Table 1, completion of the online survey did not differ significantly by age or student status. The effect of time of recruitment on completion of the online survey differed by gender, with men significantly less likely and women slightly more likely to complete the online survey if they were recruited after midnight. Participants were more likely to complete the online survey if recruited on the second night (Saturday) although this relationship was not statistically significant.

Table 1. Rates of completing online survey by gender, incentive amount and variables measured in street survey

	Men ^a					Women ^a				
	\$50 gift card ^a			Total		\$100 gift card ^a			Total	
	Street survey	n (%) who completed online survey	Street survey	n (%) who completed online survey	Street survey	Street survey	n (%) who completed online survey	Street survey	n (%) who completed online survey	Street survey
Total sample	27	13 (48.1)	26	21 (80.8)	53	34 (64.2)	22	17 (77.3)	27	20 (74.1)
Less than age 22	13	9 (69.2)	14	10 (71.4)	27	19 (70.4)	13	10 (76.9)	19	14 (73.7)
Age 22 and older	14	4 (28.6)	12	11 (91.7)	26	15 (57.7)	9	7 (77.8)	8	6 (75.0)
				Odds of being age 22 or older = 0.79; CI = 0.33, 1.89; <i>P</i> = 0.590 ^b						
Student	15	8 (53.3)	11	9 (81.8)	26	17 (65.4)	17	13 (76.5)	15	10 (66.7)
Non-student	12	5 (41.7)	15	12 (80.0)	27	17 (63.0)	5	4 (80.0)	12	10 (83.3)
				Odds of being a student = 0.96; CI = 0.39, 2.37; <i>P</i> = 0.935 ^b						
Recruited before 12 pm ^c	14	9 (64.3)	13	12 (92.3)	27	21 (77.8)	8	6 (75.0)	11	8 (72.7)
Recruited between 12 pm and 1 am ^c	13	4 (30.8)	13	9 (69.2)	26	13 (50.0)	13	10 (76.9)	15	12 (80.0)
				Odds of completing online survey if recruited after midnight = 0.23; CI = 0.06, 0.84; <i>P</i> = 0.027 ^d						
Friday night	15	4 (26.7)	14	12 (85.7)	29	16 (55.2)	6	5 (83.3)	12	8 (66.7)
Saturday night	12	9 (75.0)	12	9 (75.0)	24	18 (75.0)	16	12 (75.0)	15	12 (80.0)
				Odds of completing online survey if recruited on Saturday vs. Friday = 2.67; CI = 0.76, 9.44; <i>P</i> = 0.127 ^d						
Number of drinks consumed prior to recruitment	6.22 drinks	3.15 drinks	4.58 drinks	3.76 drinks	5.42 drinks	3.53 drinks	3.95 drinks	4.24 drinks	4.22 drinks	3.55 drinks
				Odds of completing survey by number of drinks = 0.85; CI = 0.75, 0.95; <i>P</i> = 0.005 ^d						
Number who had no drinks prior to interview	7	5 (71.4)	6	6 (100)	13	11 (84.6)	3	2 (66.7)	5	5 (100.0)
Number who had 1–5 drinks prior to interview	8	6 (75.0%)	13	10 (76.9)	21	16 (76.2)	13	10 (76.9)	13	9 (69.2)
Number who had 6 or more drinks prior to interview	12	2 (16.7)	7	5 (71.4)	19	7 (36.8)	6	5 (83.3)	9	6 (66.7)

^aOdds of men versus women completing online survey = 0.58; CI = 0.25, 1.37; *P* = 0.215; odds of those receiving \$100 versus those receiving \$50 completing survey = 2.10; CI = 0.91, 4.88; *P* = 0.084; odds of men completing survey by whether they received \$100 versus \$50 = 4.52; CI = 1.32, 15.53; *P* = 0.016; odds of women completing survey by whether they received \$100 versus \$50 = 0.84; CI = .23, 3.14; *P* = 0.796.

^bControlling for gender and gift card amount. ^cTwo women missing time of recruitment. ^dControlling for gift card amount. CI, confidence interval; OR, odds ratio.

Number of drinks consumed prior to recruitment was significantly and negatively associated with completing the online survey for men and in the same direction but not significant for women. However, by chance, men who received the \$50 gift card had consumed more drinks than had men who received \$100. Therefore, to tease apart the effects of gift card amount and drinks consumed, we examined participation rates by three levels of drinking. As shown in Table 1, although the number in each group is small, the pattern suggests that \$100 gift cards reduced the effect of number of drinks by substantially increasing completion rates among men who had consumed six or more drinks prior to recruitment (completion rate of 16.7% for \$50 gift card vs. 71.4% for \$100 gift card).

Number of drinks consumed prior to recruitment was positively associated with usual drinking pattern as measured in the online survey but reached statistical significance only for maximum amount on a single occasion for men. Correlations with usual frequency, usual quantity and maximum quantity, respectively, were $r = 0.23$ ($P = 0.188$), $r = 0.22$ ($P = 0.216$) and $r = 0.40$ ($P = 0.021$) for men and $r = 0.14$ ($P = 0.408$), $r = 0.11$ ($P = 0.549$) and $r = 0.30$ ($P = 0.089$) for women.

Discussion

Street intercept with incentives proved to be an effective and efficient recruitment approach. Over 60% of those approached participated in the brief street survey with this proportion rising to 74% on the second night. This participation rate is higher than that found by Miller, Byrnes *et al.* [6], who recruited groups outside specific venues, possibly because the present survey took only a few minutes while their study included a longer survey and breath alcohol and saliva samples.

A substantial proportion of participants in the street survey completed the online survey especially with the higher financial incentive (81% of men and 74% of women when the incentive was \$100), considerably higher than that found by Kelley-Baker *et al.* [13] in their follow-up of women at the Tijuana border. This approach also compares well with other methods, such as Web-based surveys [15]; moreover, the street intercept method allows assessment of non-response bias, which is not possible with other approaches.

It should be noted that these incentives (especially \$100) are larger than those used customarily for questionnaire research in Canada. We decided to test higher incentives because of prior difficulties we encountered recruiting young men, especially non-university heavy drinking young men. Although incentives as high as \$100 add considerably to the cost of research, the staffing costs for street recruitment are low as is the cost of

implementing an online survey. In addition, to the extent that incentives maximise participation, they help to increase the representativeness of the sample and the corresponding validity of the research findings.

A number of gender differences were identified. The effect of size of incentive was found only for men, suggesting that female bar-goers are less responsive to incentive amount or that \$50 was a sufficient incentive for maximising online survey completion by women in this particular community. As well, participation in the street and online surveys differed by time of recruitment with men less likely to participate in both if recruited after midnight while the reverse was true for women. Further research is needed to confirm this gender difference in other contexts and assess why men and women differ in optimal time for recruitment. In addition, it would be useful to assess the feasibility and success of street intercept methods for recruiting participants on their way home from bars after closing time to be able to link follow-up data (collected online) with their drinking behaviour (e.g. total consumption that night) and alcohol-related harm experienced that evening (e.g. experiences of aggression.).

Participants were more likely to participate in the street and online surveys on the second night (Saturday) than on the first night (Friday). Other conditions (weather, recruiters) were the same on both nights; thus, this pattern is consistent with Miller *et al.*'s [7] findings that response rates improved with training and experience of recruiters. It is also possible that recruitment increased due to local bar-goers having heard about the study from Friday participants or through word of mouth. However, higher recruitment on the second night could also be due to unmeasured differences between Friday and Saturday night drinkers; therefore, further research is needed to confirm the potential for increasing response rates over the period of data collection.

Completion of the online survey was not related to student status or age but was related to amount of alcohol consumed prior to recruitment. Consistent with findings by Kelley-Baker *et al.* [13], participants who had consumed more alcohol were less likely to complete the online survey; however, this effect was found mainly for men and was substantially reduced with the larger incentive. Thus, one concern about this approach is that heavier drinking men tend to be under-represented, especially without the higher incentive.

Overall, we found that the street intercept method can obtain a moderate to high participation rate (depending on level of incentive and gender) for recruiting young adult bar-goers for follow-up research. The high rate of participation by men with the larger incentive is particularly important given the difficulties in recruiting young men for research. Inclusion of

non-students is also important given evidence that non-students have a greater likelihood than college students of developing alcohol disorders in later life (see [16]).

The study had a number of limitations. First, because this part of the research was intended primarily as a trial of the street intercept approach, recruitment was conducted over a single weekend. Thus, the numbers in the analyses are small, especially when analysed separately by gender. In addition, we recruited individuals rather than groups, and a higher rate of participation in the street survey might have been obtained by recruiting groups as done in previous research (e.g. [6,8,11–14]), given that people tend to go to bars in groups and other group members may be reluctant to wait while one group member is interviewed. Further research is needed to assess the relative effectiveness of individual versus group recruitment on both initial participation and completion of follow-up research.

The approach might be further improved by making potential participants more aware of the study in advance (e.g. advertising the study on social media, making the study more visible on the street). Also, the higher participation rate on the second night suggests that participation might be expected to increase if the study operated over several weekends as research staff become more experienced and better trained, and there is greater awareness of the study in the community. It would also be useful to document additional characteristics of non-participants (e.g. apparent intoxication, group size, type of dress) to assess bias in observable characteristics of participants versus non-participants at the time of intercept, as well as collect additional data at the time of recruitment, such as usual drinking pattern that could be compared with responses in the online survey. In addition, it would be useful to obtain breath alcohol samples to estimate intoxication level and validate self-reported consumption, although such approaches would extend the length of the intercept survey, possibly reducing participation. Finally, there is also the potential to adapt intercept with other monitoring approaches, such as ecological momentary assessment (e.g. [17]).

In sum, using street intercept with young adult bar-goers is an ecologically valid and relatively efficient approach to recruiting young adults who are at high risk of alcohol-related harms. Besides providing a better alternative to convenience sampling and population surveys that tend to miss heavy drinking bar-goers, street intercept approaches provide a unique opportunity to collect key data about drinking and other experiences while the drinking occasion is in progress and have the capacity to link these data to later follow-up data on drinking pattern and other relevant variables. Knowledge gained using this approach can be used to

better understand the factors that influence risk and to improve prevention interventions and policies.

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